

 <p>United States Environmental Protection Agency Washington, DC 20460</p> <p>Interagency Agreement/ Amendment</p> <p>Part 1 - General Information</p>		1. EPA IA Identification Number DW-96-95846001 - 0		2. Funding Location by Region EPA R5					
		3. Other Agency IA ID Number (if known)		4. Awarding Office IASSC West					
		5. Type of Action New		6. IA Specialist: Kathy Tsing-Choy 206-553-4688 Tsing-Choy.Kathy@epa.gov					
7. Name and Address of EPA Organization US Environmental Protection Agency IASSC West 1200 Sixth Avenue, Suite 900, OMP-145 Seattle, WA 98101			8. Name and Address of Other Agency U.S. Army Corps of Engineers Buffalo District 1776 Niagara Street Buffalo, NY 14207						
9. DUNS: 029128894		10. BETC: DISB		11. DUNS: DOD9623AG					
12. BETC: COLL									
13. Project Title and Description Ohio-Erie Canal Closure Assessment									
This project will generate design drawings for several structural measures to prevent or reduce the transfer of aquatic nuisance species.									
14. EPA Project Officer (Name, Address, Telephone Number) MaryBeth Giancarlo 77 West Jackson Blvd. (G-17J) Chicago, IL 60604-3507 312-886-2253 E-Mail: Giancarlo.MaryBeth@epa.gov FAX: 312-692-2119			15. Other Agency Project Officer (Name, Address, Telephone) Marty Wargo 1776 Niagara Street Buffalo, NY 14207 716-879-4116 E-Mail: Martin.P.Wargo@usace.army.mil FAX: 716-879-4225						
16. Project Period: 07/18/2013 to 06/30/2014			17. Budget Period: 07/18/2013 to 06/30/2014						
18. Scope of Work (See Attachment) SCOPE OF WORK IS ATTACHED.									
19. Employer/Tax ID No. 520852695		20. CAGE No: 347A4		21. ALC: 68-01-0727					
22. Statutory Authority for Transfer of Funds and Interagency Agreement Economy Act 31 U.S.C. 1535				23. Other Agency Type Federal Agency					
24. Revise Reimbursable Funds and Direct Fund Cites (only complete if applicable)									
	Previous Funding	This Action		Amended Total					
Revise Reimbursable (in-house)				0					
Direct Fund Cite (contractor)				0					
Total				0					
	Previous Amount	Amount This Action		Total Amount					
25. EPA Amount		\$177,000		\$177,000					
26. EPA In-Kind Amount				\$0					
27. Other Agency Amount				\$0					
28. Other Agency In-Kind Amount				\$0					
29. Total Project Cost		\$177,000		\$177,000					
30. Fiscal Information									
Treas. Symbol	DCN	FY	Appropriation	Budget Org	PRC	Object Class	Site/Project	Cost Org	Ob/De-Ob Amt
683/40108	1305HCX028	1314	B	05HK6	202BJ7XF2	2506			177,000
									177,000

Part II - Approved Budget				EPA IAG Identification Number
				DW-96-95846001 - 0
31. Budget Categories	Itemization of All Previous Actions	Itemization of This Action	In-Kind Itemization of This Action	Itemization of Total Project Cost to Date
(a) Personnel		\$68,199		\$68,199
(b) Fringe Benefits		\$36,828		\$36,828
(c) Travel		\$2,655		\$2,655
(d) Equipment				\$0
(e) Supplies				\$0
(f) Procurement / Assistance				\$0
(g) Construction				\$0
(h) Other				\$0
(i) Total Direct Charges	\$0	\$107,682	\$0	\$107,682
(j) Indirect Costs:	\$0	\$69,318		\$69,318
Charged - Amount Rate: 66% Base: \$105,027.00 Not Charged: Funds-Out: Not charged by Other Agency Estimate by other Agency Amount \$				
(k) Total (EPA Share 100.00 %) (Other Agency Share 0.00 %)	\$0	\$177,000	\$0	\$177,000
32. How was the IDC Base calculated? Personnel and Fringe Benefits				
33. Is equipment authorized to be furnished by EPA or leased, purchased, or rented with EPA funds? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No (Identify all equipment costing \$1,000 or more)				
34. Are any of these funds being used on extramural agreements? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				
Type of Extramural Agreement				
Contractor/Recipient Name (if known)	Total Extramural Amount Under This Project		Percent Funded by EPA (if known)	
	Total \$ 0.00			
Part III - Funding Methods and Billing Instructions				
35.	(Note: EPA Agency Location Code (ALC) - 68010727)			
<input checked="" type="checkbox"/> Disbursement Agreement	Request for repayment of actual costs must be itemized on SF 1080 and submitted to the Financial Management Office, Cincinnati, OH 45268-7002:			
<input checked="" type="checkbox"/> Repayment	<input checked="" type="checkbox"/> Monthly <input type="checkbox"/> Quarterly <input type="checkbox"/> Upon Completion of Work			
<input type="checkbox"/> Advance	Only available for use by Federal agencies on working capital fund or with appropriate justification of need for this type of payment method. Unexpended funds at completion of work will be returned to EPA. Quarterly cost reports will be forwarded to the Financial Management Center, EPA, Cincinnati, OH 45268-7002.			
<input type="checkbox"/> Allocation Transfer-Out	Used to transfer obligational authority or transfer of function between Federal agencies. Must receive prior approval by the Office of Comptroller, Budget Division, Budget Formulation and Control Branch, EPA Hdqtrs. Forward appropriate reports to the Financial Reports and Analysis Branch, Financial Management Division, PM-226F, EPA, Washington, DC 20460.			
36. <input type="checkbox"/> Reimbursement Agreement <input type="checkbox"/> Repayment <input type="checkbox"/> Advance				
<input type="checkbox"/> Allocation Transfer-In				
Other Agency's Billing Address (include ALC or Station Symbol Number)			Other Agency's Billing Instructions and Frequency	

Part IV - Acceptance Conditions

EPA Identification Number

DW-96-95846001 - 0

37. Terms and Conditions, when included, are located at the end of the 1610-1, or as an attachment.

Part V - Offer and Acceptance

Note: A) For Fund-out actions, the agreement/amendment must be signed by the other agency official in duplicate and one original returned to the Grants and IA Management Division for Headquarters agreements or to the appropriate EPA Regional IA administration office within 3 calendar weeks after receipt or within any extension of time that may be granted by EPA. The agreement/amendment must be forwarded to the address cited in item 29 after acceptance signature.

Failure to return the properly executed document within the prescribed time may result in the withdrawal of offer by EPA. Any change to the agreement/amendment by the other agency after the document is signed by the EPA Award Official, which the Award Official determines to materially alter the agreement/amendment, shall void the agreement/amendment.

B) For Funds-In actions, the other agency will initiate the action and forward two original agreements/amendments to the appropriate EPA program office for signature. The agreements/amendments will then be forwarded to the appropriate EPA IA administration office for signature on behalf of the EPA. EPA will return one original copy after acceptance returned to the other agency after acceptance.

EPA IA Administration Office (for administrative assistance)

EPA Program Office (for technical assistance)

38. Organization/Address

39. Organization/Address

U.S. Environmental Protection Agency
IASSC West
1200 Sixth Avenue, Suite 900, OMP-145
Seattle, WA 98101

US Environmental Protection Agency
R5 - Region 5
77 West Jackson Blvd.
Chicago, IL 60604-3507

Award Official on Behalf of the Environment Protection Agency

40. Digital signature applied by EPA Award Official | Armina K. Nolan - Manager - Grants and Interagency Agreements Unit

Date

07/18/2013

Authorizing Official on Behalf of the Other Agency

41. Signature

Typed Name and Title

Date

LTC Owen Beaudoin, USACE Buffalo District Commander

08/02/2013

Scope of Work

USACE Design Support to ODNR
Ohio-Erie Canal (Summit County, Ohio)
May 31, 2013

AGENCY NAME: U.S. Army Corps of Engineers (USACE), Buffalo District (LRB)

CONTACT INFORMATION: Marty Wargo (716.879.4116); 1776 Niagara Street, Buffalo, New York, 14207; Martin.P.Wargo@usace.army.mil

1.0 Introduction/Purpose

This scope of work (SOW) outlines the responsibilities, constraints, assumptions, and schedule for the U.S. Army Corps of Engineers (USACE) to generate conceptual (roughly 50%) and final (100%) design drawings for several structural measures to prevent or reduce the probability of aquatic nuisance species (e.g., Asian carp) being able to move from the Tuscarawas River Watershed into the Cuyahoga River Watershed via the Ohio-Erie Canal in Summit County, Ohio. These drawings will be provided to the Ohio Department of Natural Resources – Division of Wildlife, who is the customer for this design effort.

2.0 Background

Outside of the Chicago Area Waterway System, the Great Lakes and Mississippi River Interbasin Study (GLMRIS) investigated a total of 36 locations in 2010 where it was initially thought that an aquatic pathway might already exist or be able to form a surface water connection across the roughly 1,500 mile basin divide between the Great Lakes and Mississippi River Basins that extends from New York State to Minnesota. Additional investigation was recommended at 18 of these 36 locations either because of a high level of uncertainty in the available information or because it was thought that an aquatic pathway may exist or be able to form at these locations from a 100-year flood event, or from an event of lesser magnitude.

Of the 18 locations, four potential aquatic pathways were identified in the State of Ohio: Grand Lake St. Marys (Mercer/Auglaize Counties), Little Killbuck Creek (Medina County), Ohio-Erie Canal at Long Lake (Summit County), and Mosquito Creek Lake (Trumbull County). The additional investigation at these locations was initiated in 2011 through the application of a risk-based approach to more definitively identify where aquatic pathways exist or may be able to form along the basin divide, and where they do exist, to estimate the probability of select aquatic nuisance species being able to arrive at the location and use it to cross into the adjacent basin.

A perennial surface water connection was found to exist between the basins through that segment of the Ohio-Erie Canal located between the Portage Lakes and the city of Akron. While the actual basin divide is located to the north of Portage Lakes in the city of Akron where the Canal

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joins with the Cuyahoga River, aquatic nuisance species from the Ohio River Basin would only be able to enter the Canal from the Tuscarawas River in the area of Portage Lakes. Any species from the Great Lakes Basin would not be able to reach the Canal because of an existing lock on the Canal in the city of Akron (Lock 1 North). The critical area of the Ohio-Erie Canal is the Long Lake Feeder Gates which provide water to the Canal from Long Lake, which is part of the

Ohio River Basin. Areas of potential flooding between the Tuscarawas River and the Canal were also evaluated. The biological investigation determined that the three Asian carp species and northern snakehead could potentially use the Canal to enter the Great Lakes Basin, although not likely within the next 20 years given these species current known distribution and ecology.

3.0 Project Team Members

Team Member	Position	Role
John Navarro	ODNR Wildlife	Primary ODNR Contact
Rich Carter	ODNR Wildlife	Secondary ODNR Contact
Hung Thai	ODNR Engineering	Canal Operations
Phil Hillman	ODNR Wildlife	Fisheries
Rich Ruby	USACE-Buffalo	Project Manager & Fisheries
Katie Mitchell	USACE-Buffalo	Design-Geotech
Carm Marranca	USACE-Buffalo	Design-Structural
Mike Baker	USACE-Buffalo	H&H
Megan Oberst	USACE-Huntington	Regulatory (wetlands)
Mac McCarty	USACE-Huntington	Survey
Marty Wargo	USACE-Buffalo	GLMRIS FA2 PM

4.0 Funding

Template Title and Number: Ohio-Erie Canal Closure Assessment (2.3.11)

Year 4 (FY13-14) GLRI funds in the amount of \$177,000. Reference separate cost breakdown spreadsheet.

5.0 Initial Potential Measures

- a. **Earthen Berm along Tow Path.** This measure would prevent ANS from entering the Canal from the Tuscarawas River. An earthen berm could be constructed parallel to and

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Ohio-Erie Canal (Summit County, Ohio)
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just along the south side of the tow path, extending east from the east side of the railroad embankment and tying into the high ground approximately where the asphalt portion of the tow path ends. Exact height of the berm is not yet determined. It was agreed that this option would keep flood waters from the Tuscarawas from reaching the tow path and be more aesthetically pleasing and reduce potential cultural resource view shed impacts than

sheet pile or a berm located on the north side of the tow path. Raising the tow path was dismissed since there would then be insufficient clearance for pedestrians to get underneath the railroad bridge. Possible concerns with this measure may be the need to clear trees (Indiana bat concerns) and minor wetland impacts by the footprint of the berm. There may also be FEMA concerns due to the placement of fill in the floodplain. Geotechnical analysis where the berm would be placed may be needed.

b. Structure in Headwaters Area of Tuscarawas River. This measure would prevent ANS from entering Long Lake from the Tuscarawas River. This could involve installation of a structure (oriented north-south) just west of Manchester Road below the Long Lake Flood Gates and Canal Feeder Gate. The potential design of such a structure is unknown at this point, but could involve the placement of a low berm (type/height unknown) extending from the parking lot at the Canal and tying into high ground on the south side of the Tuscarawas River channel (approximately 900 feet). This entire area is within the one percent FEMA floodplain and is believed to experience inundation from flooding events smaller than the one percent storm. Smaller structures that only encompass the two channels (i.e., Tuscarawas channel and the tributary channel near the feeder gate) could also be considered, but would likely have to be tied into the road bank at Manchester Road to prevent them from being flanked during flood events. Potential concerns with this measure include, but are not limited to, wetland impacts, Indiana bat habitat impacts, and placement of fill into the FEMA floodplain. This measure also likely poses the greatest concern regarding disturbance of potential archeological resources (unknown).

c. Outlet of Canal into Tuscarawas River (Ogee Weir). This measure would prevent ANS from entering the Canal directly from the Tuscarawas River. This weir is no longer used and is assumed not necessary for Canal operations. Two options were considered for this measure: (1) removal of the entire ogee weir and subsequent replacement with an earthen berm as already exists along the Canal, or (2) installation of a fence-like apparatus (angled to the south) on top of the ogee weir to prevent Asian carp from jumping over the weir into the Canal during high water events on the Tuscarawas River.

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The structural integrity of the ogee weir is not known, so it is therefore not known how easily option two could be installed or maintained. Another potential concern with this measure is that if the ogee weir may be considered an historic structure. The Canal itself through this area is not currently listed on the National Register of Historic Places, but there are several "historic structures" shown along the Canal; one of which could be this ogee weir.

d. **Wolf Creek Outlet Structure.** Consideration was initially given to installing a mesh screen or some obstruction on an existing drop box where water from the Canal enters a culvert and flows into the Tuscarawas River further to the south. Based on visual observation only, there appears to be 6-10 foot vertical drop between the invert at the drop box and the bottom. Once at the bottom of this drop box, the water immediately enters a circular culvert on the south side of the drop box (approx. 3 foot diameter). Water velocities on 2/26/13 during relatively normal conditions were extremely high and highly turbulent at the bottom of the drop box. It was therefore considered by all present to be highly unlikely for Asian carp to be able to navigate from this circular culvert into the Canal. Thus, this measure is being eliminated from further consideration.

e. **Lock 1 (north) Retrofit.** This measure would prevent ANS from passing from Summit Lake and the Canal through Lock 1 North. Two initial options could be considered. First, one or a series of screens (diameter TBD) could be inserted bank-to-bank across the Canal channel within or adjacent to the lock house to prevent adult and perhaps some juvenile ANS from passing through and reaching the weir. Under this option, a series of such screens could be used so that when one is removed for maintenance/cleaning others are still in place. These screens would extend from the bottom of the Canal to above the water surface a certain amount to prevent Asian carp from jumping over them. In addition or instead of this option, a screen could be installed across the lip of the weir within the lock house so as to block the passage of larger ANS at that point. Maintenance would be an important consideration with either option as there is likely a large amount of debris that could get caught in these screens. This measure would not likely be protective against some juvenile or smaller size classes of Asian carp. However, it may be very unlikely that Asian carp would reproduce in this area due to a lack of suitable spawning habitat or that juvenile or smaller size classes of Asian carp would reach this far upstream from a large river where habitat conditions are more suitable for spawning (e.g., Ohio River).

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f. In-stream Structure between Summit Lake and Lock 1 North. This measure would prevent ANS from reaching Lock 1 North from Summit Lake. Similar to the in-channel screen concept outlined for Measure E but at a different location. One or a series of screens (diameter TBD) could be installed across the hydraulic profile of the Canal to prevent passage of Asian carp (should they ever arrive in Summit Lake). Under this option, a series of such screens could be used so that when one is removed for maintenance others are still in place. These screens would extend from the bottom of the Canal to above the water surface a certain amount to prevent Asian carp from jumping over them. Another but possibly less likely option could be the installation of a structure across the channel of the Canal that would direct Canal water through a weir before reaching Lock 1 North. This would narrow the flow path through which an Asian carp would need to swim and would be a single point at which screens or other features might also be added to prevent fish passage. However, a concern with this concept would be making sure not to change the water surface elevation above or below this structure since this might raise the water level on Summit Lake and/or require lowering of the elevation of the weir at Lock 1 North.

g. Replacement/Repair of Long Lake Flood Gates. ODNR will engage with its existing consultant who is preparing preliminary design plans for the upper dams of the Portage Lakes Dams, to also investigate and prepare preliminary designs for the replacement/repair of the Long Lake Flood Gates. The repair of the Long Lake Flood Gates is currently aimed at improving/ensuring the integrity of the hydraulic system of the Portage Lakes Dams and is not intended to prevent ANS movement into Long Lake. This preliminary design information will be shared with USACE when it becomes available for analysis to determine if design modifications might be made for the Long Lake Flood Gates which would prevent (or reduce likelihood) the passage of ANS from the Tuscarawas River into Long Lake during high flow events. Depending on these findings, this measure may be dropped as a potential ANS control, it could be added to augment Measure B, or it could possibly replace Measure B.

* Although not part of this design effort, the effectiveness of the measures above might be greatly enhanced by concurrent ANS monitoring activities on the Muskingum and Tuscarawas Rivers, and even the Ohio-Erie Canal.

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USACE Design Support to ODNR Ohio-Erie Canal (Summit County, Ohio) May 31, 2013

6.0 Assumptions

- a. The principle ANS of concern are Asian carp, although consideration will also be given to the capabilities of northern snakehead. The exact habitat tolerances and preferences of Asian carp are becoming better understood, but there remains a degree of unpredictability. It is believed to be very unlikely that Asian carp would reproduce in the Canal and Portage Lakes area due to a lack of suitable spawning habitat. Also, juvenile or smaller size classes of Asian carp would not likely reach this far upstream from a large river where habitat conditions are more suitable for spawning (e.g., Ohio River). Research on this topic though is developing and has the potential to affect the viability of some of the measures considered under this SOW (e.g., E & F).
- b. Measures A, B, C, E and F in Section 5 above will remain under consideration up to approximately the 50 percent (conceptual) design point, at which time some measures may be eliminated or additional measures may be added to proceed toward 100 percent design.
- c. The ODNR will complete any and all associated environmental compliance actions, public coordination, and stakeholder engagement actions/requirements associated with review and ultimately implementation of any measures.
- d. The USACE will not be the implementing agency for any measure(s) selected by ODNR for construction.
- e. The ODNR will obtain any necessary rights of entry/access permissions required for the collection of information needed to complete conceptual and final designs (e.g., survey information).
- f. If found necessary, ODNR may be able to collect geotechnical information needed for completing design for an earthen berm along the tow path (near RR bridge) and/or within the Tuscarawas floodplain just west of Long Lake.
- g. When appropriate, ODNR will coordinate with the railroad that owns/operates the tracks that cross the Canal just downstream of Long Lake on the future possibility of tying the earthen berm (Measure A) into the railroad bridge embankment.
- h. Final design drawings (100 percent design) will undergo BCOE Level 2 internal USACE quality review prior to providing to ODNR.

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7. Constraints

- a. Measures should strive to be low cost and low maintenance.
- b. In addition to the Great Lakes, measures should be developed that protect the Portage Lakes from applicable ANS.

8. Areas of Uncertainty

- a. It is not known what potential effects of measures A or B may have on flood elevations north and south of the Canal.
- b. It is unknown what, if any, flood threat exists along the north side of the Canal where at least three drainage features cross underneath the Canal and drain into the Tuscarawas River to the south. These drainage features are believed likely to originate from stormwater sources and Mud Run, all within the Ohio River Basin. There are not currently any preliminary measures in Section 5 of this SOW associated with these areas (north side of the Canal). If found necessary after further evaluation, additional measures at one or more of these locations north of the Canal could be added, but are not part of the initial cost estimate for this SOW.
- c. Feasibility of creating an impoundment area between Manchester Road on the east and Measure B just to the west due to lack of significant topographic relief and the structural integrity of the Manchester Road embankment.
- d. Availability of sufficient funding to complete conceptual and final design efforts.

9. USACE Products

- a. For measures A, B, C, E, and F, USACE will provide ODNR with conceptual (50 percent) plan view and cross section (as appropriate) design drawings in a format that can be easily understood by the general public for purposes of coordination and scoping.

** ODNR will obtain public/stakeholder input on the conceptual designs provided by USACE. As appropriate, USACE may also assist ODNR with communication of design rationales and design considerations to stakeholders.

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*** Following the coordination period for obtaining public/stakeholder input, ODNR will identify which measures for which it would like final designs completed by USACE.

- b. Although not part of the current schedule in Section 10 of this scope of work or the cost estimate, the next step after this would be for the USACE will provide final (100 percent) plan view and cross section (as appropriate) design drawings and specs for each measure selected for final design by ODNR. The goal would be for ODNR to be able to use these drawings to award a construction contract.
- c. The USACE will provide a construction cost estimate to ODNR for each measure at the conceptual and final design points.

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10. Schedule. Only reflects the approximate durations to complete conceptual (50%) designs and additional time and funding would be required to complete final designs. Schedule start is from receipt date of funding.

Milestone	Tentative Duration (weeks)
1. USACE Receives GLRI Funding	TBD
2. ODNR obtains any necessary ROE's for Survey	1
3. USACE completes Survey Field Work	4
4. Survey Data Provided to LRB-Design	2
5. Geotechnical Information Collected (RR area & Long Lake area)	Concurrent
6. ODNR Engages Key Stakeholders (prior to coordination)	Concurrent
7. H&H Completes HEC RAS Model Updates	8
8. H&H Determines Need for Protection on North Side of Canal	2
9. H&H Elevation Recommendations Provided to Design	3
10. LRB (Design/VI) Completes 50% (conceptual) Design Drawings & Associated Construction Cost Estimates	9
11. ODNR Conducts Public Coordination	4 (partly concurrent with #10)
12. ODNR Determines Which Measures to Retain/Finalize	2
13. LRB (Design) Completes 100% (final) Design Drawings, Plans & Specs, and Associated Construction Cost Estimate(s)	TBD
Total Duration	35

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11. Safety Considerations

The USACE *Safety and Health Requirements Manual* [EM 385-1-1] details many of the key areas that the project team should consider while executing this work. Projects must be evaluated in light of EM 385-1-1 and any other hazards identified by the team. Any team members conducting field work for this project must first conduct a safety briefing with all personnel participating in that work effort. The following general items can be considered by the Project Manager or the designated work item manager when preparing for these safety and health briefings (not necessarily an exhaustive list):

• Safety briefings prior to beginning work	• Safe driving awareness	• Short-term or short-lived hazards	• Pertinent alarm signals	• Specific hazardous chemicals
• Location of nearest hospital	• Important labels or placards (beware of unlabeled containers)	• Ability to recognize poisonous plants	• Trip/Fall hazards	• High noise areas (should be posted)
• Evacuation procedures	• Speed limits	• Off-site hazards that could impact project site.	• Recent injury or illness of team members	• Customer, contractor or site specific rules
• Fire hazards	• Wearing of PPE (PFD)	• Being aware of fatigue and its impacts	• There is no authorization for short-cuts	• Prior to initiating a new task, take two minutes to analyze risk